

NRO REVIEW COMPLETED

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4 October 1962

MEMORANDUM FOR : Deputy Director (Research)  
SUBJECT : Remarks on Lockheed Preliminary Design  
Study of Ramjet Drone

1. A conclusive evaluation of this proposal cannot be made on the basis of the preliminary and incomplete data presented in the Lockheed report; however, a few observations are presented on certain design features.

2. Several preliminary studies have been made by Lockheed and others to evolve a drone version of the U-2 aircraft and Lockheed has made a preliminary study of a drone version of the basic A-12 aircraft. In the U-2 case, the study results showed marginal feasibility; in the A-12 case Lockheed believes a drone version could be built, however, the Government has not established a firm view.

3. In the current report Lockheed proposes a staged combination of a modified A-12 as launcher and a ramjet powered reconnaissance drone reconnaissance vehicle. The drone configuration is 45 feet long, twenty feet wing span, and 14,000 pounds launch weight.

4. In 1958-59, when this Agency was sponsoring feasibility studies which led to the present ORCA program, a preliminary development was conducted with [redacted] for a similar staged but piloted reconnaissance aircraft using the B-36 as a launcher and a ramjet reconnaissance aircraft of 47 feet length, 37 feet wing span, and 38,000 pounds gross weight. The difference in size and weight of the [redacted] aircraft vs. the current Lockheed proposal is explained by the following performance tabulation:

Lockheed staged drone

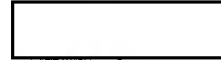
Range after launch  
Cruise speed  
Cruise Altitudes

5. The [redacted] project was cancelled in 1959 largely because of the operational complexities and lesser reliability of such a staged system as compared to an unstaged aircraft.

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6. By way of specific remarks on the Lockheed drone proposal the following can be said:

a. Elimination of the danger of capture of a pilot has obvious political advantages above and beyond a technical appraisal of the sort attempted here. However, it must be remembered that in an emergency situation the extremes of high temperature and dynamic pressure encountered in the A-12 case as against the U-2 mean that emergency situations involving the A-12 are more severe in terms of pilot survival than those involving a U-2 type aircraft.

b. The drone proposal provides a 300 pound camera payload allowance in a volume several times smaller than that available in the A-12. Cameras for the A-12 are about 600 pounds in weight.

Past experience with camera payload designs



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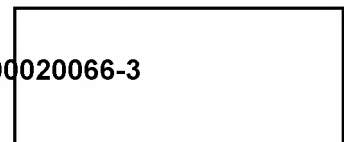
proved that space restrictions do not allow camera designers sufficient latitude to obtain photographic resolutions and ground coverage equal to that expected from the A-12. No camera design has been included in the Lockheed report and hence no quantitative comparison can be made; however, the drone vehicle could not be expected to equal photographic resolution, ground coverage, and other desirable photographic features anticipated from the A-12.

c. The ramjet power plant installation as proposed includes an inlet duct of about 35 ft. length. Even if a production ramjet were suitable in terms of thrust, weight, and fuel consumption, an extensive duct development must be anticipated for the proposed installation.

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